REMARKS

Applicants have carefully reviewed the Office Action mailed June 4, 2003 (paper no. 10). Applicants thank Examiner Bissett for her allowance of claims 39-45 and 60-61 and her indication of allowable subject matter in claims 48 and 55. In response to the Office Action, Applicants have amended claims 1, 22, 33, 46 and 53. No claims have been added nor canceled. By way of these amendments, no new matter has been added. Accordingly, claims 1-50, 52-57 and 59-61 remain pending in this application. Applicants respectfully request reconsideration of the present application in view of the above amendments and the following remarks.

Claim Rejections under 35 U.S.C. §102 over Pellegri or Breault

Claims 1, 9-13 and 22-23 were rejected under 35 U.S.C. §102(b) as being anticipated by Pellegri et al., (U.S. Patent No. 4,197,178). Claims 1, 9-13 and 22-23 were also rejected under 35 U.S.C. §102(b) as being anticipated by Breault et al. (U.S. Patent No. 4,233,369). The Examiner argues that the Pellegri patent teaches improved bipolar separator plates having a heat-curable insulating coating. The Examiner further argues that the Breault patent teaches a pair of impervious graphite plates receiving a heat-curable adhesive. In view of the amendments to independent claims 1 and 22, the Applicants respectfully traverse the rejection.

Claims 1 and 22 have been amended to remove the option of polymerizing the coating precursor in response to heat. Instead, the claims teach polymerizing the coating precursor in response to radiation. As described in the detailed description of the present application, there is a distinction between heat-cured coatings and radiation-cured coatings. Radiation-cured coatings overcome the problem of the separator plates warping when cured at the high temperatures necessary with heat-cured coatings (see page 6, lines 26-31 and page 7, lines 1-7 of the present application). As noted by the Examiner in paragraph 12 of the current Office Action, the Pellegri patent fails to teach coatings cured by methods other than heat. Accordingly, because the Pellegri and Breault patents fail to disclose each limitation of amended independent claims 1 and 22, specifically the use of radiation to polymerize the coating precursor, the rejections under 35 U.S.C. §102(b) are overcome.

Further, claims 9-13 and 23 depend from independent claims 1 and 22 and add additional features and limitations. Accordingly, the dependent claims are also patentable. Therefore the Applicants also request removal of these rejections in view of the amendments to claims 1 and 22.

Claims Rejected Under 35 U.S.C. §103 in view of Pellegri, Breault and Ying

Claims 3, 5-8, 14-17, 19, 25-30, 33-34, and 36 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pellegri et al. in view of Ying et al. (U.S. Patent No. 6,183,901). Further, claims 3, 5-8, 14-17, 23-30, and 33-34 were also rejected under 35 U.S.C. §103(a) as being unpatentable over Breault et al. in view of Ying et al. The Examiner argues that is would have been obvious to use the protective coating taught by Ying in Pellegri or Breault's electrochemical cells to improve the toughness of the separators. In view of the amendment to independent claim 33 and the arguments below, the Applicants respectfully traverse the rejection.

MPEP Section 2143 sets forth the basic requirements for the Patent and Trademark Office to establish prima facia obviousness as follows: "To establish a prima facia case of obviousness, three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

There is no motivation or suggestion to combine the Pellegri and Ying or the Breault and Ying patents to result in the claimed invention. The Pellegri and Breault patents teach gas-impermeable separator plates having a heat-curable coating. The Pellegri and Breault patents fail to mention coatings cured by methods other than heating, such as by radiation as claimed in the present application. To fill the deficiencies in Pellegri and Breault, the Examiner relies on Ying. The Ying patent discloses porous separator plates having a protective coating cured by heat, UV

light, visible light, infrared radiation or electron beam radiation. The Ying patent presents this list of available methods and then specifically teaches the use of UV lamps to cure the coating.

Gas-impermeable separator plates, as in Pellegri, Breault and the present invention, tend to warp under the high temperatures necessary to cure heat-curable coatings. Meanwhile, porous separator plates, as in Ying, are made from a substantially different composition and do not tend to warp under high temperatures. Therefore, porous separator plates may withstand any variety of curing techniques including heat or infrared radiation. In contrast, to overcome the problem of warpage, Pellegri teaches adding hardeners to the gas-impermeable separator plates. Meanwhile, Breault teaches the use of an adhesive that cures at a lower temperature to avoid problems typically encountered with heat-curable coatings. The claimed invention overcomes the warpage problem associated with gas-impermeable separator plates by curing the coating precursor with radiation, instead of heat. Accordingly, there is no motivation or suggestion to combine the teachings of Pellegri and Breault, regarding gas-impermeable separator plates having hardeners or low-temperature heat-curable coating, with Ying, regarding porous separator plates receiving infrared radiation.

Further, the Pellegri patent, in fact, teaches away from using radiation to polymerize the coating precursor applied to gas-impermeable plates. The Pellegri patent teaches adding aromatic amines to the separator plates to prevent the separator plates from warping under the high temperatures necessary to cure the coating (see column 4, lines 59-62 of the Pellegri patent). Aromatic amines are hardeners and permit the separator plates to withstand higher temperatures. Instead of adding hardeners, the coating of the present invention is subjected to radiation instead of heat to polymerize the coating. Teaching the use of aromatic amines by the Pellegri patent therefore teaches away from using radiation as claimed in the present application.

The Breault patent also teaches away from using radiation to polymerize the coating precursor applied to gas-impermeable plates. The Breault patent teaches the use of low-temperature heat-curable adhesives to prevent the separator plates from warping under the high temperatures necessary to cure the traditional heat-curable coatings (see column 6, lines 63-68 of Breault). Instead of using a low-temperature heat-curable coating, the present invention uses radiation instead of heat to polymerize the coating. Teaching the use of low-temperature heat-

curable adhesive by the Breault patent therefore teaches away from using radiation as claimed in the present application.

Claim 33 has been amended to include the teaching of the coating precursor polymerized in response to radiation. Therefore, the respective independent claims each teach the use of radiation to cure the precursor. For the reasons given above it is not obvious to combine the Pellegri and Ying or the Breault and Ying patents to result in the claimed invention. Further, claims 3, 5-8, 14-16, 19, 23-30, 34 and 36 each depend from patentable independent claims 1, 22 or 33. The dependent claims each add additional features and are also patentable. Accordingly, the rejection is overcome and the Applicants respectfully request allowance of claims 3, 5-8, 14-17, 19, 23-30, 33-34, and 36.

Claim 24 was rejected under 35 U.S.C. §103(a) as being unpatentable over Pellegri et al. The Examiner argues that it would have been obvious to apply the coating of Pellegri at any thickness to balance the cost and insulation properties of the cell structure. In view of the amendment to independent claim 22, the Applicants respectfully traverse the rejection. Claim 24 adds an additional limitation to the patentable subject matter of amended independent claim 22. As argued above, Pellegri et al. fails to teach each limitation of amended independent claim 22. Accordingly, claim 24 is also patentable and the Applicants respectfully request removal of the rejection.

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Pellegri in view of Canfield (U.S. Patent No. 6,274,262). It is the Examiner's position that it would have been obvious to use a screen printing technique to apply the gasket layer of Pellegri's invention and provide a patterned discontinuous gasket layer. For the reasons stated above, amended independent claim 1 is patentable over Pellegri. Claim 2 depends from amended claim 1 to add an additional limitation. Therefore, claim 2 is also patentable. Accordingly, the Applicants respectfully request removal of the rejection under 35 U.S.C. §103(a) with respect to claim 2.

Claims Rejected Under 35 U.S.C. §103 over Sasaki in view of Boldt

Claims 2-4, 6, 14, 17-21, 24-25 and 28-38 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki et al. (U.S. Patent No. 6,337,120) in view of Boldt (U.S. Patent No. 5,667,227). The Examiner relies upon Pellegri, as described above, to teach the coated fuel cell

plate and the process of coating the fuel cell plate. The Examiner further relies on Sasaki and Boldt to teach the various limitations present in the dependent claims. The remarks presented above with regard to the Pellegri patent and its teaching of only heat-curable coatings are also applicable with the current rejection. Each rejected claim either includes the limitation of radiation to cure the coating precursor or depends from independent claims having this patentable subject matter. Accordingly, because the Pellegri, Sasaki and Boldt patents all fail to teach or suggest each limitation, the claims are patentable. For at least this reason, the Applicants respectfully traverse the rejection.

Moreover, the Applicants also respectfully traverse the rejection because Sasaki and Boldt fail to teach or suggest a gas impermeable plate as claimed. Sasaki discloses the use of a gasket on a porous carbon plate, but fails to disclose the use of screen printing or exposing a fuel cell plate to at least two different wavelengths of radiation. While Boldt teaches a method and composition for coating a gasket with a composition for providing improved sealing characteristics and storage life, where the coatings are screen printed and exposed to two different ultraviolet wavelengths, Boldt fails to teach the use of gas impermeable separator plates. Therefore, combining Sasaki with Boldt fails to produce the claimed invention. Because Sasaki and Boldt fail to teach or suggest each feature of the claimed invention, the Examiner fails to establish a prima facie case of obviousness. Accordingly, for at least this reason, the Applicants respectfully request removal of the rejection and allowance of the claims.

Claims Rejected Under 35 U.S.C. §103 in view of Shustack '387, Clubley or Shustack '391

Claims 46-47, 52-54 and 59 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shustack '387 (U.S. Patent No. 5,128,387) in view of Clubley et al. (U.S. Patent No. 4,719,036). The Examiner argues that Shustack '387 discloses an ultraviolet radiation-curable coating precursor composition, but fails to teach the use of an air release agent in the coating composition. Accordingly, in a previous response to non-final office action the Applicants amended independent claims 46 and 53 to include the patentable subject matter of the coating precursor having an air release agent as suggested by the Examiner. In response, the Examiner has again rejected the claims but relies upon Clubley to teach the use of an air release agent. In view of the amendment to independent claims 46 and 53, the Applicants respectfully traverse the current rejection.

In view of the amendments, the Shustack '387 and Clubley patents fails to teach or suggest each limitation of independent claims 46 and 53. Specifically, the claims have been amended to include the limitation that the coating precursor is adapted to coat a non-metallic substrate. Both Shustack '387 and Clubley teach the use of a coating for a metallic substrate. Accordingly, because the patents fail to teach or suggest each limitation the Applicants respectfully request allowance of independent claims 46 and 53.

Further, claims 47, 52, 54 and 59 each depend from patentable independent claims 46 and 53. The dependent claims add additional features and limitations to the patentable subject matter of independent claims 46 and 53 and are also patentable. Accordingly, the Applicants respectfully request removal of the rejection and allowance of claims 46-47, 52-54 and 59.

Claims 49-50 and 56-57 were rejected under 35 U.S.C. 103(a) as being unpatentable over Shustack '387 in view of Clubley et al. as applied to claims 46-47, 52-54 and 59 above, and further in view of Shustack '391 (U.S. Patent No. 5,128,391). The Examiner relies upon the Shustack '391 patent the specific compounds of multi-functional monomers and photoinitiators. In view of the amendments to independent claims 46 and 53, the Applicants respectfully traverse the rejection.

Independent claims 46 and 53 have been amended to include the patentable subject matter of the coating precursor adapted for coating a non-metallic substrate. Claims 49-50 and 56-57 depend from these independent claims, respectively and add features and limitations. Accordingly, the dependent claims are also patentable. Therefore, the Applicants respectfully request removal of the rejection and allowance of the claims.

Double Patenting

Claims 1-2, 5-9 and 14-16 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting over claims 1-4 of co-pending Application No. 09/708,965. Attached is a Terminal Disclaimer executed by an Attorney of Record. In view of the submission of the Terminal Disclaimer, the rejection is now moot.

Allowable Subject Matter

Claims 48 and 55 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have chosen not to amend claims 48 and 55 at this time because they add additional limitations and depend from patentable independent claims 46 and 53, respectively. As argued above, independent claims 46 and 53 are allowable because the Shustack '387, Clubley and Shustack '391 patents fail to teach or suggest each limitation of the claims. Accordingly, dependent claims 48 and 55, as written, are also patentable.

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CONCLUSION

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. According, the Examiner is respectfully requested to pass this application to issue.

It is believed that any additional fees due with respect to this paper have already been identified in any transmittal accompanying this paper. However, if any additional fees are required in connection with the filing of this paper that are not identified in any accompanying transmittal, permission is given to charge account number 18-0013 in the name of Rader, Fishman and Grauer PLLC. If the Examiner has any question or comments, she is kindly urged to call the undersigned to facilitate prosecution.

Respectfully submitted,

Dated: Sept. 3, 2003

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